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FINAL REPORT

ON THE

THIRTEENTH

IN-PLANT GROUP TRAINING

PROGRAMME ON SYNTHETIC FIBRES

APPLICATION OF SYNTHETIC FIBRES

IN TEXTILE PROCESSING

(BLENDING AND QUALITY CONTROL)

120

Project No. US/INT/86/124

13th In-Plant Group Training Programme

on Synthetic Fibres,

"Application Of Synthetic Fibres In Textile Processing"

(Blending and Quality Control)

Höhere Bundes-Lehr- und Versuchsanstalt für
Textilindustrie Wien V.,
Spengergasse 20, A-1050 Vienna, Austria

Österreichisches Chemiefaserinstitut
Plößlgasse 8, A-1040 Vienna, Austria

Director: OSTR Mag. A. Berger
Managing Director: R. Katschinka

Thirteenth In-Plant Group Training Programme on Synthetic Fibres.

Organized by the United Nations Industrial Development Organisation (UNIDO) in co-operation with

the Government of Austria
Austrian Federal Chamber of Commerce,
Association of Austrian Industrialists,
Höhere Bundes-Lehr- und Versuchsanstalt für
Textilindustrie, Wien V, and
Österreichisches Chemiefaserinstitut, Vienna

Held in Vienna, Austria
from 29th September to 31th October 1986

Final Report by L. MACHHERNDL
Executive Manager

C O N T E N T

1. Acknowledgements

The Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie Wien V and the Österreichische Chemiefaserinstitut wish to express their appreciation to the UNIDO for organizing this training programme and for the excellent and successful cooperation.

Our thanks are specially directed to

Mr. A. Vassiliev (Deputy Director General, Department of Industrial Operation, UNIDO)

Ms. A. Tcheknavorian-Asenbauer (Head, Chemical Industries Branch, Department of Industrial Operations, UNIDO)

Ms. I. Lorenzo (Head, Training Branch, Department of Industrial Operations, UNIDO)

Mr. V. Bysyuk (Chemical Industries Branch, UNIDO)

Mr. M. Youssef (Chemical Industries Branch, UNIDO)

Mr. K. Sepic (Head, Agro-Industries Branch)

Mr. A. Eraneva (Agro-Industries Branch)

Mr. D. Gardellin (Head, Purchase and Contract Service)

Ms. M. Weissenböck (Chemical Industries Branch, UNIDO)

At the same time we give our thanks to the Austrian authorities and corporations, whose aid, preparatory work, valuable aid and understanding enable us to achieve a remarkable effect of the training programme.

Austrian Federal Chancellery

Ms. B. Dekrout Mr. U. Stacher

Austrian Federal Ministry for Foreign Affaires

Mr. H. Miltner Mr. F. Schmid

Austrian Federal Ministry for Educations and Art

Mr. W. John Mr. O. Tischler

Austrian Federal Chamber of Commerce

Mr. H. R. Seidl

Mr. K. Haas

Mr. F. Erhart

Association of Austrian Industrialists (VÖI)

Mr. P. Kapral

Mr. H. Krejci

Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie

Mr. A. Berger (HBLVAT)

We also are indebted to the Austrian Companies which we visited to complete our training programme.

2. Background and Objectives

1. The programme, organized by UNIDO in co-operation with the Government of Austria, is one of a series of UNIDO Training Programmes on specific sectors of industry for engineers from developing countries. The programme will be carried out by the Federal Institute for Higher Education and Research for Textile Industry (Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie - HBLVAT), a leading technological institute in the field of textile technology. The programme is the thirteenth in a series of programmes implemented annually since 1974.

2. The trend of training activities in the field of production and application of synthetic fibres is characterized by increasingly sophisticated nature of the training programme requiring high level experts, consultants and modern specialized equipment. Consultation meetings at plants and companies to deal with specific technological problems are also an important feature of current training activities.

3. UNIDO implemented some technical assistance projects and held meetings in the field of synthetic fibres and this experience can be available for the developing countries through the training programme.

4. Of the man-made fibres developed to date, four principal types namely polyester, polyamide, polyacrylonitrile and cellulosic fibres, dominate the market at present. This situation will not change substantially in the near future, although olefin fibres have already become important in certain areas of application. Special fibres, including inorganic fibres, carbon fibres are still very expensive and will for the present continue to be produced only in small quantities.

5. On the whole, the trend is towards modified man-made fibres based on more basic polymers and extensive knowledge of production and conversion techniques. Chemical modificitaion is effected essentially by:
copolymerization, introduction of additives, polymer combination, treatment by irradiation, introduction of reactive groups.
Physical modification is possible by four principal methods: changing the fibre cross-sections or spinning hollow fibres, mixing elementary of various types, texturing, increasing the number of elementary filaments of synthetic filaments while reducing the general titre.

6. Generally, the following trends are apparent in man-made fibres production:

   - the reduction at process stages e.g. for quasi-textiles, by non-woven technology or by film production;
   - the integration of textile treatment stages in the process of fibres, e.g. warping, stretch-texturizing, dyeing, converting;
   - rapid spinning methods, combined shaping, stretching and winding or rapid shaping and winding for polyester and polyamide fibres;
   - extrusion spinning;
   - increasing the degree of automation in fully automatic production.

7. The developing countries as a result of the increasing demand from the internal and external markets for synthetic fibre products and the availability of comparatively cheap labour, have established synthetic fibre industries which are rapidly expanding. A number of these countries lack the required raw materials, financial resources and know-how to start fibre synthesis in order to meet the growing needs of the industry; but in general they have a relatively well developed industry for processing of synthetic fibres, for which the aquisition and introduction of new technical developments in this field are important.

8. The objective of the programme is to up-grade the knowledge and professional skills of the participants and to assist them in performing their duties more efficiently and solving their problems encountered in their daily work in the field of man-made fibre technology and application.

9. The programme has received the support of the Austrian Federal Ministry of Foreign Affairs, the Austrian Federal Economic Chamber, the Austrian Federal Ministry of Education and Fine Arts and the Association of Austrian Industrialists. HBLVAT will conduct the training on its premises utilizing its laboratories and equipment for this purpose. The institute has a staff of highly qualified specialists.

3. Description of the Training Programme

This Year's training was focused on "Textile Production - Blending and Quality Control". It consisted of a theoretical part designed to up-date the participants' knowledge on synthetic fibre technology and laboratory and in-plant studies to familiarize them with the latest developments in production and processing equipment and techniques.

The programme took place in Vienna, Austria from 29th September to 31th October 1986. (See appendix I for the time table)

The programme covered the latest technological developments in the field of application synthetic fibres in textile processing and consisted of a theoretical part designed to up-date the participants s knowledge on synthetic fibre technology and laboratory and in-plant studies. The main emphasis of the processing technology including fibre engineering, testing and identification and on the application of synthetic fibres for various purposes.

The Höhere Bundes-Lehr- und Versuchsanstalt gave full co-operation in running the theoretical and practical courses on its premises utilizing its laboratories and equipment for this purpose. (See appendix II for details of lectures and appendix III for equipment used in the practical classes.)

The institute s staff of highly qualified specialists took full charge of the lectures, demonstrations, laboratory work, discussions, in-plant training programme and plant visits. (See appendix IV for list of staff members who participated in the training programme.)

In addition to the course conducted at the Institute plant visits in Austria were arranged to privied an opportunity for the participants to see some new developments in materials, processes and applications, to exchange technical information with experts as well as to study the possibilities of obtaining licenses and know-how on processes as well as equipment. (See appendix V for details of in-plant training and plant visits.)

The training programme was attended by participants each from the following countries: Argentina, VR China, Ethiopia, VR Korea, Malaysia, Pakistan, Sri Lanka, Turkey, Uganda, Uruguay, Vietnam.

During the course of the training programme individual appointments were arranged for interested participants to discuss with UNIDO staff members problems affecting the development of synthetic fibres and blending and quality control in the participants home-countries.

A programme of social activities was organized by HBLVAT and other sponsors for the benefit of the participants. (See appendix VII for details of social activities).

Home countries of participants in the training programme on the production and application of Synthetic Fibres 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, and 1986 see appendix VIII.

Appendix I

Agenda and programme of work

Opening Ceremony: 29th September 1986, Conference Room III,VIC

9:30	Chairman pro tem:	Ms. A. Tcheknavorian-Asenbauer Head, Chemical Industries Branch Department of Industrial Operations UNIDO
	Opening speech:	Mr. A. F. Vassiliev Deputy, Director General Department of Industrial Operations UNIDO
	Speeches by:	Mr. H. Miltner Permanent Mission of Austria to the United Nations, Federal Ministry of Foreign Affairs
		Mr. F. Erhart Technical co-operation with Developing Countries Austrian Federal Economic Chamber
		Mr. H. Hubeny Director Laboratorium für Kunststofftechnik, LKT-TGM (Laboratory for Plastics Technology)

Mr. R. Katschinka
Director
Österreichisches Chemiefaser-Institut
(Austrian Man-made Fibre Institute)

Closing speech: Ms. A. Tcheknavorian-Asenbauer

Monday, 29th September 1986

09:30 - 11:00	Opening Ceremony, VIC
14:00 - 17:00	Presentation of National Papers at Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie

Tuesday 30th September - Friday 31th October 1986

Lectures, In-plant training and plant visits, laboratory work

Thursday, 30th October 1986

14:00 - 17:00	Final session at HBLVAT, Vienna Discussion about national problems
19:00	Farewell Party at Ober St. Veit

Appendix II

Details of Lectures

Subject

Man-made Fibre Trends, Raw Materials and the Environment
W. Albrecht, Prof. Dr., Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG

Selection of Fibres and Yarn Constructions for better Textile-Products
W. Albrecht, Prof. Dr., Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG

Processing of Synthetic Fibres and Blends, Fibre-Blends and their Properties
J. Hördler, Dipl.-Ing. Member of the staff of the Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie, Vienna

Cotton, one of the major agricultural Products of this world and some reflections on development and Industiralization
G. Grünwald, Ing., UNIDO Textile Expert

Yarn Making - Yesterday - Today - Tomorrow
K. Schnaubelt, Ing., Member of the staff of the HBLVAT, Vienna

Spinning Quality Yarns from Pure cotton and Blends spun on conventional Systems
K. Schnaubelt, Ing., Member of the staff of the HBLVAT, Vienna

Application of Polypropylen fibres in Nonwovens
Gerhard F. Huettner, Horst Peter Supanz, Chemie Linz AG, Linz Austria

Polypropylen Fibres
Peter Horst Supanz, Gerhard F. Huettner, Chemie Linz AG, Linz, Austria

Chemistry and Technology of Cellulosic Staple Fibres and Filaments
L. Kloimstein, Dipl.-Ing., Dr., Enka Austria AG St. Pölten, Austria

Fibre Fineness, Micronaire Reading of Cotton Fibres
J. Hördler, Prof., Dipl.-Ing., P. Schrefl, Prof. Dipl.-Ing., Dr., Members of the staff of the HBLVAT, Vienna

Introduction to Polyester-Fibre Production and Equipment
W. Peters, Dir. Dr. Austria Faserwerke, Lenzing Austria

The TREVIRA Sortiment - its Properties and Fields of Application
H. Zimmermann, Dr., Farbwerke Hoechst AG, Frankfurt, FRG

Process Planing and Practical work
N. Mach, Dipl.-Ing., Dr., Member of the staff of Chemiefaser Lenzing AG, Lenzing Austria

Viscose- and Modal Fibres in Blended Fabrics
H. Krässig, Doz., A.O.Univ.Prof.Dipl.-Ing. Dr., Director of the Research Department of Chemiefaser Lenzing AG, Lenzing Austria

Special Blends, i.e. Viscose, Polyester, Viscose/Cotton and Viscose/Acrylic Fibres
J. Lenz, Dir. Doz., Chemiefaser Lenzing AG, Lenzing Austria

Physiological Aspects with Fabrics Made of Blends
P. Schrefl, Dr.techn.,Dipl.-Ing., Member of the staff of the HBLVAT, Vienna

Dyeing of Synthetic Fibres and Blends
W. Lebensaft, Prof., Dr., L. Machherndl, Prof., Dr., Members of the staff of the HBLVAT, Vienna

The Burning Behaviour of Textiles - Textile Floor Covering
H.P. Bauer, Ing., Austrian Textile Research Institute, Vienna

Advanced Drycleaning Technology
H.Huff, Ing., Member of the staff of HBLVAT, Vienna

The Laundry in Theory and Practice
R. Hetzer, Ing., Member of the staff of HBLVAT, Vienna

Blended Fabrics
P. Koppenburg, Sulzer Rüti Machinery Works Ltd. Rüti, Switzerland

Top Weaving from one Supplier
B. Christen, Sulzer Rüti Machinery Works Ltd. Rüti, Switzerland

Yarn Preparation for Weaving Machines
H. Mall, Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Organisation of a Modern Textile Plant, Part I and II
B. Strang, Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Mercerisation and Aftertreatment
H. Lass, Dipl.-Ing., Dr., Prof., Member of the staff of HBLVAT, Vienna

Review of aims of winding
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Build of spinning bobbin - requirements for good unwinding conditions
N.N., Schlafhorst & Co.m Textile Machinery, Mönchengladbach, FRG

Unwinding of the spinning bobbin and build-up of the wound package
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Packages for Beaning
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Packages for shuttleless Looms
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Packages for knitting
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Packages for dyeing
N.N., Schlafhorst & Co., Textile Machinery, Mönchengladbach, FRG

Latest Technology in Engineering and Optimizing
Preparation machinery of Fibre Blending (Intimate Blend)
applications: - Open End Yarns, - Ring Yarns
J. Fugmann, M. Schwartz, B.S.C. Engineers

Transfer of Chemical Technology in Developing Countries
K. Czeya, Doz., Dr., Dipl.-Ing., Vienna

The Textile Industry from an International and National Point of View

H. Huber, Dr., Hauptgeschäftsführer des
Fachverbandes der Textilindustrie, Vienna

The Economic and Technical Future of Man-made Fibres

H. Krässig, Doz., A.O. Prof. Univ., Ing.,
DDr.habil, Formerly Director of the Research
Department of Chemiefaser Lenzing AG, Lenzing Austria

Appendix III

Equipment for Testing Fabrics and Man-made Fibres

Programme at HBLVAT Vienna

VIBROSKOP, linear density of fibres
MICRONAIRE, linear density of fibres
AIR-FLOW, linear density of fibres
JOHANNSEN-ZWEIGLE, fibres length distribution by array method
USTER, fibre length and length distribution automatically working
INSTRON, breaking-strength and elongations yarns, fabrics
USTER-DYNAMOMETER, breaking-strength and elongations yarns, automatically working

ZWICK-TESTIMAT, breaking-strength and elongations yarns, automatically working
ZWICK-Tearing-Tester
TWIST-Tester
PRESSLEY-Tester, strength of fibres, bundle method
BURSING-Tester, VEB Rauenstein
THICKNESS-Gage
USTER-Tester equipment (Uneveness of textile strands)
ABRASION-Tester
AIR-PERMEABILITY-Tester
RANDON tumble pilling Tester
ACCELERATOR
SCANNING ELECTRON MICROSKOP, PSEM 500, Philips
PRETEMA-Spectromat FS 3 A (Filterspectrophometer) Colour masurement, Pretema, Switzerland
FIXOTEST
XENOTEST, Original Hanau Quarzlampengesellschaft, BRD
PRAXITEST

LABOR-STENTER, LABOUR-PADDING Machine, E. BENZ, Switzerland
EPPRECHT RHEOMAT 15 Contraves, Switzerland
FLAMETESTER, Ahiba, Basel Switzerland
INFRARED-SPECTROPHOMETER 197, Perkin Elmer
GASCHROMATOGRAPH SIGMA 3 Perkin Elmer
SPECTROPHOMETER PM Q II, C. Zeiss, BRD
ELREPHO, Zeiss, BRD
ELREPHO 2000, Zeiss, BRD
HT-Dyeing apparatures, Scholl, Switzerland
HT-Dyeing apparatures, Ochsner, Austria
HT-Yet Dyeing machine, Then, BRD

Appendix IV

Staff of the Training Programme

Director: Mr. OSTR. Mag. A. Berger
Managing Director: Dr. R. Katschinka
Executive Manager: Prof. Dr. techn. Dipl.-Ing. L. Machherndl
Scientific Adviser: Univ. Prof. Dr. W. Albrecht
Doz. A. O. Univ. Prof. Dipl.-Ing. DDr. habil H. Krässig

Public Relations and social Engagements: Ing. R. Hetzer
Plant Visits: Dr. R. Katschinka

Lectures: Prof. Dr. W. Albrecht
Ing. H. P. Bauer
Doz. Dr. Dipl.-Ing. D. Czeja
Dipl.-Ing. Dr. L. Kloimstein
Dipl.-Ing. W. Graninger
Ing. G. Grünwald
Prof. Dr. M. Hackauf
Prof. Dipl.-Ing. W. Herzog
Ing. R. Hetzer
Prof. Dipl.-Ing. J. Hördler
Dr. H. Huber
Ing. H. Huff
Dipl.-Ing. G. Hüttner
Ing. F. Kneubühler
Dipl.-Ing. H. Koppenburg
Doz. A.O. Univ.Prof.Dipl.-Ing.DDr.habil H. Krässig
Prof. Dipl.-Ing. Dr. H. Lass
Prof. Dr. D.M. Sc. W. Lebensaft
Dir. Doz. Dr. J. Lenz
Ing. H. Locher
Dipl.-Ing. Dr. R. Mach
Prof. Dipl.-Ing. Dr. L. Machherndl
Dipl.-Ing. Dr. J. M. Meißner
Ing. G. Neudörfer

Dr. G. Peters
Ing. H. Pfister
Dr. L. Puchegger
Ing. R. E. Rebsamen
Dipl.-Ing. M. Schwartz
Ing. H. P. Supanz
Dir. Ass. R. Schlie
Ing. K. Schnaubelt
Prof. Dipl.-Ing. Dr. P. Schrefl
Ing. H. Strauß
Ing. B. Streng
Dipl.-Ing. H. Tamas
Dr. H. Zimmermann

Assistance and Preparation: Ass. G. Jessner, Ass. G. Schneider

M. Fried
S. Friedl
G. Gschmeidler
E. Neufingerl
H. Neufingerl
R. Nothelfer
J. Pichler

Appendix V

In-Plant training and plant visits

To the special interest of the participants in-plant training at fibre producing companies and plant visits to fibres-using companies during the four week course were organized.
The selection of the companies gave an regional and technical survey on the Austrian man-made fibre-producing and using industry:

1) Chemiefaser Lenzing AG Pulp, Viscose Staple fibre, Acrylic, staple fibres, Paper, Sodiumsulfate, Sulphuric acid, Synthetic sheets and foil strips, Machinery for processing Synthetic sheets, laboratories	A-4860 Lenzing
2) Austria Faserwerke GesmbH	A-4860 Lenzing
3) Linz Textil AG Spinning and weaving mill	A-4020 Linz
4) Tumfart Comp., Weaving Mill	A-4183 Traberg
5) Baumann, Textile Printing Factory	A-3950 Gmünd
6) Schiel Seide AG, Weaving Mill	A-3813 Dietmanns
7) Triumph International AG,	A-2700 Wr. Neustadt
8) Salesianer, Laundry - Drycleaning	A-2700 Wr. Neustadt
9) Chemie Linz AG Filaments, Spun Fibres, Sheets Non-woven, Fertiliizers, Pharmaceuticals, Laboratories	A-4020 Linz
10) Becker & Söhne, Spinning Mill	A-4614 Marchtrenk
11) VOEST-Linz AG,	A-4020 Linz

12)	Starlinger, Circular weaving looms	A-2564 Weissenbach/ Triesting
13)	Dr. E. Fehrer, Machinery for Spinning and Non-wovens	A-4021 Linz
14)	Walek, Spinning Mill	A-2700 Wr. Neustadt
15)	Pottendorfer Textilwerke Spinning and Weaving Mill	A-2603 Felixdorf
16)	A. Heinisch GesmbH, Dyeing and Finishing Mill	A-3952 Gmünd
17)	Joh. Backhausen u. Söhne, Home Textiles	A-3945 Hoheneich

Appendix VI

LIST OF PARTICIPANTS

Country	Name	Adress
Argentina	GAROFALO, Mr. Juan	Technical Coordinat. INTI/Nat.Techn.Ind. Institute San Pedro 1560 (1712) Castelar Buenos Aires
VR China	CHU, Mr. En Ta	Depart.Head,Product. Planning/Synthetic Textiles, Weaving & Finishing No.33 Dong Dan San Jiao Beijing/Peking
Ethiopia	LADJESO, Mr. Taddele	Dept.Head,Product. Planning/Synthetic Text, Weaving & Finishing Ethio-Japanese Synth. Text.S.C. P.O.B.2184 Addis Abeba 40
VR Korea	KIM, Mr. Chong Bu	Chief of Laboratory Control, Application Quality - testing Institute of Chemical Fibres,Acad.of Science Sineiz / DPR Korea
Malaysia	AZMI, Mr.Bin Mohamed Johari	Prod.Planning,Qual. Control of Fibres Arab-Malaysian Devel. Berhad/P.O.B.98,Kamunting Ind.Estate,Taiping,Perak
Pakistan	MIAN, Mr.Muhammad Rashid	Senior Prod.Manager Production,Planning Control Ravi Rayon Ltd. P.O.B.830 Lahore/Pakistan
Sri Lanka	MOLLIGODA, Mr.Gamini Jayantha	Senior Text.Technol. (Weaving),Training Ministry of Text.Ind. 32 1/1,Bathiya Avenue Kalubowila,Dehiwela

Sri Lanka	SUMATHIRATNE, Mr. Walahewage	Spinn.and Weaving - machines Ceylon Petrol.Corp., Nylon Plant/113 Galle Road, Colombo 3/Sr.L.
Turkey	GÖNÜLSEN, Mr. Yasar	Planning of Prod. Training,Work Study Quality & Control Sümerbank Eskisehir Basma Sanayii Müessesesi Planlama Müd. Eskisehir / Turk.Rep.
Uganda	MUDUMI, Mr.Samwel Michael	Gen.Supervision and Administration P.O.B.408 Tinta/Ug.
Uruguay	ZINELLI RIZZOTTI, Mrs. Teresa	Head of Text.Section Laborat.Tecnologico del Uruguay/Tecnical Advise,Qual.Control Galicia 1133-Montevideo Uruguay
Vietnam	NGUYEN, Mr. Cong Thu	Manuf.of Visc.,HWM-fibres,Spinning,Weaving,Finishing,Plann. Institute of Industrial Chemistry, 2 Pham ngu Lao S.R.Viet - Nam

Appendix VII

Social Activities

1. Trip to the Wachau, Visit to the Monastery of Melk and Dürnstein
2. Sight-Seeing Tour in Vienna
3. Visit to the Opera
4. Visit to the Empiral Chapel (Hofburgkapelle)
5. Visit to the Monastery of Klosterneuburg
6. Visit to the Spanish Horse Riding School
7. Visit to the Monastery of St. Florian
8. Farewell Party at Ober St. Veit
9. Private Invitations
10. Visit to the "Schatzkammer"
11. Visit to the Museum of Arts
12. Visit to the Museum of Arms
13. Visit to the Museum of Textiles
14. Visit to Castle of Kreuzenstein

Appendix VIII

Home countries of Participants

	74. 1.	75. 2.	76. 3.	77. 4.	78. 5.	79. 6.	80. 7.	81. 8.	82. 9.	83. 10.	84. 11.	85. 12.	86. 13.	Total
Afghanistan									1					1
Argentina	1				1								1	3
Bangladesh	1		1		1	1			3					7
Bolivia				1			1					1		3
Brazil	1				1		1	1	1					5
Bulgaria	1								1					2
Burma											1			1
Burundi											1			1
China							1	1				1	1	4
Colombia				1		1								2
Costa Rica		1												1
Egypt	1	1	1	1	1	1	1		2			2		11
Ethiopia				1	1			1				2	1	6
Ghana			1	1		1	1				1			5
Guyana										1				1
India		1			2					1				4
Indonesia		1	1	1					1					4
Iran	1													1
Iraq		1	2	2	2	1		1						9
Jamaica		1			1									2
Kenya						1								1
Korea		1								1			1	3
Lybia		1		1				1						3
Malaysia												1	1	2
Mexico	1			1										2
Mozambique								1						1
Nepal											1			1
Pakistan		1		1									1	3
Peru		1							1					2
Philippines	1	1		1			1							4
PLO							1							1
Poland						1	1							2
Romania	1		1		1									3
Singapore	1	1	1											3
Somalia										1				1
Sri Lanka				1		1							2	4
Sudan									1					1
Syria			1			1	1							3
Tanzania								1		1	2			4
Thailand				1	1	1	1							4
Turkey	1		1			1		1					1	5
Uganda										1	1	1	1	4
Uruguay			1										1	2
Vietnam												1	1	2
Yemen A.Rep.									1					1
Yemen VR										1		1		2
Yugoslavia	1													1
Zambia									1		1	1		3
Zimbawe											1			1
	12	11	12	14	12	11	10	8	12	8	9	11	12	142

The UNIDO in Vienna has to be congratulated in bringing about this Training Programme and we want to express our appreciation to all UNIDO-members who have contributed to the realization of this project.

We hope that we could fulfill the intentions of UNIDO by giving the participants as much as possible of insight, knowledge and experience.

We also want to give our thanks to the participants for their co-operation and wish them an effective evaluation in their native countries.

12/2

ÖSTERREICHISCHES CHEMIEFASER-INSTITUT

Mr.
D. Gardellin
Purchase and Contract Service
UNIDO / Div. of Industrial Operations

Vienna International Centre
P.O.Box 300
1400 W i e n

Ihre Nachricht vom	Ihr Zeichen	Unser Zeichen	Wien
			February 11, 1987

Ref.: Project No. US/INT/86/124 - 13th Group Training-Programme on Synthetic Fibres (contract No. 86/55)

F I N A N C I A L S T A T E M E N T

With reference to the above Contract and pertinent invoice of October 9 , 1986, we herewith submit the detailed financial statement of the costs incurred in connecion with the training programme carried out for UNIDO in 1986:

		öS
I.	Theory (including special lectures)	82.724,--
II.	Practice	92.087,40
III.	Management (preparatory work, organisation)	85.260,--
IV.	Use of equipment	23.275,--
V.	Materials	10.320,--
VI.	Excursions, plant-visits	57.247,70
VII.	Lecture notes	24.490,--
	G r a n d t o t a l	öS 375.404,10

Thanking oyu in advance we are

very truly yours,
ÖSTERREICHISCHES CHEMIEFASER-INSTITUT

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